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Understanding the Adoption of Business-To-Employee (B2E) Portals: An Experience of a Large Australian University

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Abstract: Business-to-Employee (B2E) portals represent a customised, personalised, ever-changing mix of news, resources, applications, and e-commerce options that become the desktop destination for everyone in a business. They have the potential to improve corporate communication with employees and enhance their productivity and loyalty. Attracted by this potential, many organisations are now investing in B2E portal technologies. Little is however reported about the experience of businesses in adopting these portals. This paper presents the staff portal adoption experience of a large Australian university and reports on the findings about the motives of the university for adopting the portal, the features included in the portal, the approach used in its introduction and the key factors that influenced the decision of the university to invest in it. The findings identified an important factor that was not cited in the portal literature. The implications are discussed.

Keywords: e-commerce management, portal, B2E portal, staff portal, adoption, portal adoption, Australia, case study.

I. Introduction

Today's businesses are characterised by the presence of a distributed workforce that is required to stay in touch with corporate offices and access relevant contents and applications in order to make decisions [3]. However, the dynamic business environment within which the distributed workforce functions often leads to a lack of communication, and consequently, company loyalty. To maintain communication with their employees, to encourage them to share knowledge, and to build a sense of community, businesses are challenged to develop a good delivery system for their workforce [13]. Corporate intranets which were developed by many businesses for delivering services to their dispersed employees are often fragmented and lack customisation features [2]. Fortunately, business-to-employee (B2E) portals have recently emerged that embrace e-business approaches and internet technologies and are able to provide a comprehensive set of services to employees [21]. These portals, which are also known as employee or staff portals, represent the next step beyond the current generation of corporate intranets [7]. They provide not only

corporate information tailored to the needs of employees but also useful applications for assisting them in performing their routine tasks [19] and serve as a single point of business contact with employees [15].

The use of employee portals is growing steadily. Merrill Lynch Capital Markets envisage portals to become a US\$14 billion business outnumbering the growth rates of other hot enterprise applications markets [7]. According to Banks [4], the number of organisations implementing B2E portals is also increasing in Australia. However, very little research is reported about the adoption of these portals which is not surprising given that it is an emerging technology. Moreover, academic literature had traditionally been slow to follow up the fast-moving trends of e-business in general [12]. As a result, little is known about why businesses adopt B2E portals, how they introduce these portals, what portal features are offered, and what factors influence their decisions to adopt B2E portals. This paper addresses these key research concerns by focusing on a large Australian university that has introduced a staff portal in recent years. The findings from the university are significant because they illuminate the influence of a set of success factors useful to the senior management of the potential adopter organisations intending to introduce B2E portals. The paper also contributes in building a rich empirical foundation for B2E portals.

The paper is organised as follows. First, the existing literature on the adoption of B2E portals is briefly reviewed and a preliminary model is developed explaining how key factors affect the decision of business to adopt B2E portals. Second, the research approach is described. Third, the background of the participating case organisation is presented. Fourth, empirical evidence from the case organisation relating to the research concerns is presented. Fifth, the case study findings are then discussed in the light of the existing literature and the proposed model. Finally, the contributions of the research are highlighted and areas of possible further investigations are mentioned.

II. Related B2E Portal Literature

Business Motives for B2E Portal Adoption

Generally, being motivated by the intent to gain economic benefits businesses adopt B2E portals. These portals are expected to offer customised contents and applications to employees which in turn empower them in making decisions,

improve their efficiency and enhance their satisfaction with their business [7, 11].

Features of B2E portals

A range of attractive features are included in B2E portals in order to enable the dispersed workforce to access customised services through the portal. These features can be grouped into three broad categories [5]: core capabilities, supportive capabilities and web services. Core capabilities refer to the ability of portals to create contents and inclusion of documents in many formats (called publishing), search capability to enable employees to locate relevant documents, personalisation facility allowing employees to modify their own interfaces, and on-line collaboration capabilities. Supportive capabilities include those tools that are necessary for the well-function of portals, and consist of: security to access resources and profiling aimed at sending information to employees based on data obtained from human resources department. In contrast, web services include those services that provide employees with an access to e-marketplace where a company offers employees discounts on products or services.

B2E Portal Adoption Approach

Sparse scholarly literature is available that addresses how businesses should introduce B2E portals. This view is consistent with that of Tojib et al. [20] who acknowledge that inadequate attention has been paid in the portal literature concerning the adoption approach of B2E portals. However, trade magazines provide useful suggestions concerning the introduction of employee portals in business settings. For example, Meuse [14] offers a multi-step guideline concerning the introduction of successful employee portals: a) determining employees' want, b) making content compelling, c) reviewing popular websites to determine how employee access portals, d) establishing a single point of entry, e) creating useful services, f) branding employee portals and g) choosing a competent provider. On the matter of in-house B2E portal development, Tojib et al. [20] have recently proposed a framework in which they have recommended prototyping and incremental approach as the most suitable development strategy. In addition, the use of pilot project was also emphasised.

B2E Portals Adoption: A Preliminary Model

A brief review of the existing B2E portal literature indicates a sheer lack of studies investigating the factors affecting the adoption initiatives of portals. Hence, the information technology and e-business literature was consulted to develop a preliminary model (shown in Figure 1) that includes the following most frequently cited factors: (a) management support, (b) IT expertise, (c) complexity with B2E portals, (d) cost of introducing B2E portals, and (e) vendor pressure. A brief justification for including these factors is provided below.

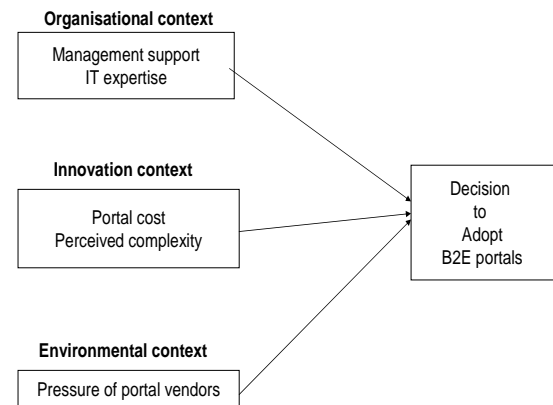


Figure 1: A conceptual model of B2E portal adoption

Management support refers to not only the articulation and symbolic championing of a new undertaking by the senior management but also the commitment of resources [16]. Many studies in IT have shown that management support is absolutely necessary for successfully adopting an innovative application [17, 18]. In the context of B2E portals, it is important to secure commitment from senior management because employees represent a key asset for the survival and progress of business. Management must recognise that availability of on-line resources through portals has the ability to significantly improve the performance of employees. The integration of on-line resources with portals however requires considerable investment which cannot be obtained without strong management support. Moreover, training, which helps the smooth completion of B2E portals on schedule involves financial commitment for which management commitment is further necessary. Hence, the following proposition is suggested:

P1: Management support is positively related to B2E portals adoption decisions

A lack of technical knowledge has long been identified as an important factor that may negatively affect the introduction of an IT project [9]. Unlike many other IT applications, B2E portal projects are more complex due to the need for establishing seamless integration with many other applications (that may possibly run on different platforms). Therefore, adequate IT expertise must be available before deciding to introduce B2E portals. Considerable expertise is also needed for building a B2E portal from scratch. Moreover, when B2E portals are acquired from external vendors, expertise must be available on how to tailor the product to suite the needs of business. Therefore, an organisation is likely to adopt B2E portal when it has relevant IT expertise. Hence, the following

proposition is suggested:

P2: The IT expertise of organisations is positively related to B2E portals adoption decisions

Cost is an important factor for any IT application and is usually assumed to negatively affect the adoption of the application [8]. This view is supported by Benbya [5] who argued cost effectiveness of portals as a major factor affecting its adoption by organisations. In relation to B2E portals, costs include hardware costs, software license costs, software development costs, design costs, system integration costs and maintenance. Such costs play even a greater role because commercially available portal products are very expensive which quite often run into millions. This is supported by Gartner group which estimated that portals featuring full workplace integration would cost between US\$1 million to US\$3 million [1]. Therefore, the following proposition is developed:

P3: The perceived cost is negatively related to B2E portals adoption decisions

Complexity generally refers to whether a technology is difficult to understand and use [6]. In the context of B2E portals, it is argued that complexity is likely to be greater than other forms of IT-systems because of the need to integrate portals with disparate application systems that exist in organisations. The perceived complexity may thus deter the introduction of B2E portals in organisations. Hence, the following proposition is suggested:

P4: The perceived complexity is negatively related to B2E portals adoption decisions

Today's organisations, of all sizes, operate in a highly dynamic business environment which is characterised by pressure arising from influential external bodies. The adoption of B2E portals by rival organisations may encourage businesses to adopt these systems to remain competitive. Furthermore, IT vendors position portals as a compelling way of integrating business processes that spans across multiple applications [2]. Hence, driven largely by vendor hype and promises, businesses are also likely to introduce B2E portal solutions. As such, the following proposition is suggested:

P5: The perceived vendor pressure is positively related to the B2E adoption decisions.

III. Research Approach

B2E portal adoption is a contemporary phenomenon which needs to be examined in its natural settings. Moreover, the complex interplay of actions between academic and administrative staff and the distribution of power among different faculties and administrative units within an university environment are also likely to increase the complexity of B2E portal adoption. Hence, it is critical to capture the experiences of the relevant people and the

context of their actions to understand B2E portal adoption practice. As such, a case study approach which is suitable for understanding phenomena within their organisational context was chosen [22]. A large university was selected as a revelatory case site because it successfully introduced staff portals in recent years and was willing to share its rich experience with the researchers. In-depth interviews were sought from three senior executives: head of the IT function, IT applications manager and a senior manager responsible for flexible learning and teaching (FLT) environment. The interviewees granted access to university reports relating to the introduction and structure of staff portals, flexible learning and teaching environment, and conference papers that they had presented on staff portals. This helped the researchers to corroborate the information provided during the interviews. The interviews were tape recorded which were subsequently transcribed and were sent to the interviewees for review. Data collected from the interviews were analysed using the pattern matching logic [22].

IV. Description of Case

The participating case is a large university located in a capital city, Australia. It has more than 50,000 students from over 100 countries and 5000 staff who are spread over several campuses. The university is recognised for its excellence in teaching, learning, research and graduate outcomes. In the year, 2004 the university had a revenue of about A\$800 millions. Its IT department consists of about 100 employees and has employed a wide range of IT enabled applications in support of major business processes supporting the core functionalities of the university.

V. Case Study Findings

This section presents empirical findings concerning: a) the motives of the university for adopting staff portal, b) the features and services offered by the portal, c) the portal development approach, and d) the factors that had an effect on the university's decision to adopt staff portals.

Staff Portal Adoption Motives

The motivation to adopt portals was conceived internally. In the year 1997, the senior management of the participating university recognised that its teaching practices require significant changes in order to retain and expand its current market. Consequently, a university-wide master plan was developed in the year 1998 that provided a new direction for the university. As a part of the master plan, the 'Flexible Learning and Teaching Plan' was released that suggested the university to embark on a program to deliver a student-centered flexible learning and teaching practices based on a suitable IT infrastructure. More specifically, the plan identified the need for a homogeneous and integrated IT-enabled environment to allow staff and students alike to access and manage online resources. The integrated

environment should serve as a means to coalesce, summarise and personalise online resources into a manageable stream of highly relevant information for both staff and students.

Members of the senior management were contemplating how best they could address the vision of the flexible learning and teaching plan. By consulting the head of the IT function, the senior management then expressed the need to introduce an internet-based solution in which all of the teaching and learning resources, services and functions could be made available in one place. The head of the IT function then consulted those senior IT staff who had expertise in the development of web-based applications for delivering services. After carefully analysing the university's needs to support the flexible learning and teaching plan, the senior IT staff and the head of IT function then recommended the introduction of a web-based portal as a solution to implement the directions provided by the plan. The senior management accepted the views expressed by the senior IT staff and advised them to prepare a project proposal. The senior IT staff then looked at the commercially available portal offerings (e.g. 'Domino', 'Latest Domino') that were available in the market at that time. The team soon realised that most the existing products were immature and very expensive. This prompted them to consider an in-house development option.

The primary motivation for the university to introduce the portal was to help positioning itself in a highly competitive education market. Portals were chosen a vehicle to create a flexible learning and teaching environment that would set the university apart from other educational institutions. The university currently prides itself as being the leader in introducing portals. This sentiment is reflected when the IT manager made the following remarks:

"We are the leader among Australian universities in relation to portals. Whenever any other university develops any portal-related applications they usually come to us and check on our applications and systems, they try to follow us as we are successful."

This view is also shared by the manager of the FLT team as he made the following comments:

"Our portal has always been the premier portal in Australia, so we are the leader in this field"

Features and Services Offered through the Staff Portal

Several dozen services are currently offered through the portal. However, the most popularly used services include: a) e-mail, b) employee self-services, c) class booking, d) research grant administration, e) handbook printing, and f) online advertisement via marketplace. E-mail service is heavily used by the university staff particularly when they are off-campus. The portal has also integration with employee self services and enables staff to view their pay-slips and leave status. There is a class booking system available on the portal and hence if any staff wants to do a library class or one of the expert research classes then they

may book it through the portal. The portal has links with research grant administration systems (which is in SAP) and it allows administration staff to look at financial snapshots. Staff are able to view all their research projects and grants. Staff can also access a system called Cupid which records information relating to printing of materials and handbooks of all courses run by the university. There is also an online marketplace where both staff and students can buy and sell things. However, only advertisement is handled and actual payment is not supported by the marketplace. Currently, the portal neither offers any functionality for online procurement nor it supports staff travel. Hence, staff cannot book and purchase tickets.

The university staff generally use a web browser (Netscape) to access the portal. They authenticate using their credentials recorded in the LDAP directory services which is the central backbone of the university's IT infrastructure. It provides a single, authoritative source for identification, authentication and profile information, such as department, role of systems access. Once authentication is successful, staff are able to view their pay-slips and leave information through the ESS (which is in SAP ERP), update a course on the courseware system, view the status of a call in the HelpDesk system or review summary information from other web resources. All these information are homogenised by the staff portal into a set of information and services that is meaningful to staff. In summary, staff can quickly log in, find what they need, change it if required, and log out again from anywhere on or off campus. A workflow model of the portal is shown in Figure 2.

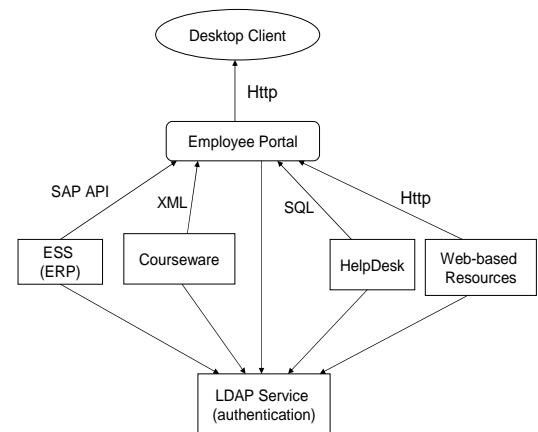


Figure 2: A workflow model of the staff portal

Portal Development Approach

The FLT group was established in the year 1999 which is responsible for developing the portal and integrating the services (discussed in the previous section) through the portal. The group consists of about fifteen people chosen from four functional areas: learning and teaching, research, administration support and information technology services.

At the initial stage, about five IT staff joined the FLT group and constructed the core of the portal. However, once the portal became operational more IT people joined the FLT group for providing on-going maintenance and training of portals.

The portal was built with an open source toolkit called 'Html mason' which is in PERL language. PERL was chosen because of its rich collection of open source library functions. The development team used about 100 library functions to offer functions like discussion groups, your directory and e-mail and many others through the portal. The development team felt the need for powerful servers to support the operations of the portal and hence several 18K domain hardware servers were acquired.

The FLT group adopted an incremental developmental process for constructing the portal. At the initial stage, a prototype was developed which was demonstrated to the senior management and many other staff chosen from several functional areas of the university. Based on their feedback, the portal was further enhanced. The first pilot trial of the portal took place in March, 2000. Based on the feedback received from the participants of the trial, several aspects (most notably interface and performance) of the portal were further improved. Eventually, the portal was officially launched in July, 2000. The FLT group is still enhancing the functionalities offered by the portal. According to the manager of the FLT team:

"We never stopped developing, we are still developing it's an incremental developmental approach. We were doing prototyping, what the people want, let's find that thing, let's build that thing and then release it."

Critical Factors Affecting Portal Adoption

A discussion with the participating executives confirmed the existence of a strong management support for the adoption of staff portal in the university. The senior management understood and appreciated the role of portal in implementing the flexible learning and teaching environment within the university, and hence offered full support for the project both in terms of providing requisite resources and academic credibility. This is reflected in the following remarks of the head of the IT function:

"The senior management was the driving force of the project. They actually provided the project with the academic credibility and the value; they could see the academic value of what we were doing and they then became closely associated with the project and their involvement was absolutely critical."

This view is also shared by the manager of the FLT team who commented:

"... Senior management support was certainly there. The portal project was not under funded, it started well."

The university had some bright IT staff members who were innovative and supportive to the needs of

implementing staff portals. These members had the right mind set, understood the meaning of portals (as very little was known about portal technologies at that time), and had the ability to train themselves about the open source technologies to be used in building staff portals. These members exploited the available set of open source tools based on the Perl programming language and created a working prototype which was demonstrated to the senior management. The prototype convinced the senior management about the ability of the in-house IT staff in implementing staff portals. Therefore, the availability of in-house IT expertise was a major factor that persuaded the senior management to introduce staff portal. According to the head of the IT function:

"Two of our most innovative staff members responded to my request to participate in staff portals. They took advantage of the available technology and knowledge to create a very prototype portal. This prototype was subsequently formed the basis to obtain an approval by the senior management."

The portal project was conceived as a direct result of the existence of a strong need for the university to provide on-line services to staff and students alike in support of the flexible learning and teaching environment. Without such an expressed need, it would have been impossible for the IT department to push the idea of establishing a staff portal for the university. According to the Head of the IT function:

"There was an established need within the university to provide on-line services to staff and students through the Internet."

The manager of the FLT team supported this view as he made the following remarks:

"They (the senior management) were thinking how they could fulfil the university's need for delivering on-line services to facilitate flexible teaching and learning objectives. They were really saying like, we want a Harvard Quality Learning and Teaching activity so that all of the resources and all of the services and functions will be in one place. This sounded like a portal to us."

The university did not invest heavily in the staff portal project and therefore did not consider the project to be an expensive undertaking. The portal was built within the existing university budget. Necessary human resources in terms of IT application developers were pulled from other projects; they were brought together to form a team. Furthermore, as the team used free open source code for developing the portal little cost was incurred for acquiring necessary software. Hence, the actual cost of development was perceived to be very low. Therefore, cost of the project was not considered to be a major factor affecting the decision of the senior management to introduce staff portals. According to the Head of the IT function:

"Yes, the portal was developed within existing budget. I

had the kind of resources/budget for various areas and I decided how to actually get a start together and activate it."

The university did not experience any pressure from the portal vendors to introduce staff portals. The head of the IT function and the IT applications manager both confirmed this view. According to the IT applications manager:

"At that time, the portal solutions offered by the vendors were not mature and there was no pressure from them on us to introduce their products".

VI. Discussion

The university neither looked at the staff portal as a means to receive direct visible economic gains nor introduced the portal in response to frustrations expressed by unsatisfied employees who had difficulties in locating university resources from off-campus. The initiative was directed at addressing the strategic vision of the university to promote itself as a distinguished educational institution by creating a flexible learning and teaching environment.

A description of the features and services offered by the staff portal (presented earlier) reveals that the portal possesses all the three broad groupings of features identified by Benbya et al. [5]. The portal allows the inclusion of documents in multiple formats and enables employees to use the search engine for locating the relevant information. The contents of the portal are customised based on the needs of each faculty. The portal however lacks tools to support on-line collaboration among employees. The staff portal has also incorporated security mechanisms and each employee is required to authenticate using a password. However, the portal does not offer any features that allow employees to customise their own interfaces or contents. Interestingly, the portal does provide employees with an access to weather information and a university operated on-line marketplace in which employees and students alike can place advertisements.

The question of whether to build a portal from scratch or purchase commercial components was critical to the university. It recognised that the commercial products offered by the IT vendors were not only immature at that time but were also found to be inadequate to meet their unique needs to implement the flexible teaching and learning environment. Consequently, the university made a concise decision to build the staff portal from scratch. The experience of the university is consistent with the views expressed by Brooks [7] who encountered difficulties in recommending a suitable employee portal for a large company. She evaluated four major portals and discovered that each one of them was targeted in a direction that really did not address the needs of the company.

The portal development team had followed an incremental approach and used prototypes to establish employee requirements and obtain approval from the senior management which according to Brooks [7], Gruhn et al. [10]

and Tojib et al. [20] is a useful strategy for developing successful e-commerce portals.

Out of the five key factors shown in the conceptual model of B2E portal adoption (Figure 1), only two factors (i.e. management support and IT expertise) have received strong support in relation to the adoption of staff portal in the university. In contrast, cost of portal and pressure from portal vendors were not found to have any influence on the decision of the university to adopt staff portals which is not surprising given that the portal development team had used free open source code for developing portal and the immaturity of the commercial available products at that time for which vendors could not press hard on the university to acquire their solutions. However, the factor that was found to have strongest influence on the university's decision to introduce staff portal is its explicit need for an appropriate technology to support the flexible teaching and learning environment. In other words, the existence of an explicit business need encouraged the university to actively seek a portal solution.

VII. Conclusion

This paper has addressed four key concerns relating to the adoption of B2E portals in the education industry. A large Australian university which has introduced staff portals in recent years provided the empirical context in which to better understand the research concerns. The initiative of the university to adopt a staff portal was found to have originated in-house and was aimed at improving its flexible teaching and learning environment and thus to set the university apart from other tertiary educational institutions. The portal was found to have included a range of features that were explained in terms of the taxonomy suggested by Benbya et al. [5]. Finally, the proposed conceptual model of B2E portal adoption has also received some support. However, the evidence from the university suggests the presence of a strong business need to be an important determinant of the decision to adopt staff portals. This particular aspect is not promoted by the portal vendors.

The findings of this study are important because, as the B2E discipline is very new and still immature, useful guidelines and success factors are not yet available compared to those of the B2B and B2C aspects of e-business. Furthermore, as the risk of B2E portal failure represents a significant financial loss for business, an important task of the e-business researchers is to contribute to the knowledge to support the business community to successfully adopt and diffuse portals. This paper contributes to this aim by investigating the factors that potentially affect the decisions of business to successfully introduce B2E portals.

The paper does not address the challenges presented by the portal or examines the success of portals from the viewpoint of employees. Thus, further studies are required to investigate these issues and to determine whether cultural factors have a significant influence on business decisions to adopt portals.

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